Differential Gene Expression in Explanted Human Retinal Pigment Epithelial Cells 24-hours Post-Exposure to 532 nm, 3.0 ns Pulsed Laser Light and 1064 nm, 170 ps Pulsed Laser Light 12-hours Post-Exposure: Results Compendium

> John W. Obringer Martin D. Johnson

Laser and Optics Research Center, Department of Physics

United States Air Force Academy Colorado Springs, Colorado 80840

June 2004

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED



DEAN OF THE FACULTY UNITED STATES AIR FORCE ACADEMY COLORADO 80840

BEST AVAILABLE COPY

20041021 125

USAFA TR 2004-01

This article, "Differential Gene Expression in Explanted Human Retinal Pigment Epithelial Cells 12-hours Post-Exposure to 532 nm, 3.0 ns Pulsed Laser Light and 1064 nm, 170 ps Pulsed Laser Light12-hours Post-Exposure: Results Compendium," is presented as a competent treatment of the subject, worthy of publication. The United States Air Force Academy vouches for the quality of the research, without necessarily endorsing the opinions and conclusions of the authors. Therefore, the views expressed in this article are those of the authors and do not reflect the official policy or position of the United States Air Force, Department of Defense, or the US Government.

This report has been cleared for open publication and public release by the appropriate Office of Information in accordance with AFI 61-202 and USAFA FOI 190-1. This report may have unlimited distribution.

ROBERT S. FREDELL, Lt Col, USAF	
Director of Faculty Research	Date

REPORT DOCUMENTATION PAGE

Form Approved OMB No. 0704-0188

The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (10704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be Self-Book 1204. The Telephore of the provision of information if it does not display a currently valid OMB control number.

PLEASE DO N	OT RETURN YO	DR FORM TO T	of information if it does not disp HE ABOVE ADDRESS.	lay a currently valid	OMB contro	number.
1. REPORT D	ATE (DD-MM-Y		ORT TYPE			3. DATES COVERED (From - To)
	5-06-2004		TECHNICAL	-FINAL		
Cells 24-Hou	Gene Expressions 1rs Post-Expos	ure to 532 nm.	d Human Retinal Pigm 3.0 ns Pulsed Laser-	Light and		NTRACT NUMBER USAFA F05611-02-P-0471
Compendiun) ps Pulsed Las	er-Light 12-H	ours Post-Exposure: R	Results	5b. GR	ANT NUMBER AFOSR FQ8671-0100507
					5c. PRO	OGRAM ELEMENT NUMBER
6. AUTHOR(S Obringer, Jo Johnson, Ma	hn,W., Ph.D.				5d. PRO	DJECT NUMBER
	,				5e. TA	SK NUMBER
					5f. WO	RK UNIT NUMBER
B&J Enterpri Laser and Or Dean of the I USAF Acade	ises, Inc., P.O otics Research Faculty emy, Colorado	. Box 63056, Center, Depart	ND ADDRESS(ES) Colorado Springs, CO ment of Physics			8. PERFORMING ORGANIZATION REPORT NUMBER USAFA TR-2003-05
9. Sponsori	NG/MONITORIN	G AGENCY NAM	ME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S) AFOSR
Air Force Of 22203-1954	fice of Scientif	ic Research, 4	015 Wilson Blvd #713	B, Arlington,	VA	USAFA/DFP/LORC
Academy CC	80840		ment of Physics, Unit	ed States Air	Force	11. SPONSOR/MONITOR'S REPORT NUMBER(S)
Distribution A		or public relea	T ase. Distribution is un	limited.		
13. SUPPLEME	ENTARY NOTES					
cell and mole pigment epith exposure usin the database of investigative a bioeffects as of of laser bioeff	ser light for mi operations. The cular level con delial cells usin ag gene express of laser-tissue i approach conti the cell and mo fects research,	mereased pote cerning the effigence a cadaver or sion microarray nteraction at the nues to illustrate the cular level.	fects of laser exposure gan donor explant systy technology (gene chine molecular level using the the use of human explants). Additionally, we offer	of human celtem for genes ip). The two ag gene exress xplants as an or 3 conception.	s the fact lls. We as different experime experime	ne likelihood of personnel exposure to laser that there is paucity of basic science at the ssessed the sublethal insult to human retinal itially expressed 12 and 24 hours postents presented herein are intended to add to filing as the assessment endpoint. This intal model for assessing laser-induced soutlining our vision for the future progressilding from laser bioeffects data.
15. SUBJECT	TERMS					
Laser, Bioefi	fects, Biophysi	es, Human Exp	plants, Gene Expression	on Porfiling,	USAFA	
	CLASSIFICATIO		17. LIMITATION OF		19a. NAN	ME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT		ABSTRACT	OF PAGES		W. Obringer
Unclassified	Unclassified	Unclassified	Unl	35	19b. TELI	PHONE NUMBER (Include area code) (719) 333-6003

Differential Gene Expression in Explanted Human Retinal Pigment Epithelial Cells 24 hours Post-Exposure to 532 nm, 3.0 ns Pulsed Laser-Light and 1064 nm, 170 ps Pulsed Laser-Light 12 hours Post-Exposure: Results Compendium

ABSTRACT

The use of laser light for military and commercial applications has sharply increased the likelihood of personnel exposure to laser light during operations. The increased potential for human exposure highlights the fact that there is paucity of basic science at the cell and molecular level concerning the effects of laser exposure of human cells. Current safety standards are largely extrapolations of exposure limits using a minimal visible lesion endpoint in the Rhesus monkey retinal model. A non-animal model for assessing laserlight damage to tissue, particularly human, is quite desirous for obvious scientific, political, and fiduciary reasons. We assessed the sublethal insult to human retinal pigment epithelial cells using a cadaver organ donor explant system for genes differentially expressed 12 and 24 hours post-exposure using gene expression microarray technology (gene chip). It appears that pulses of laser light are sensed and markedly alter gene expression. The two experiments presented herein are intended to add to the database of laser-tissue interaction at the molecular level using gene expression profiling as the assessment endpoint. This investigative approach also showcases a global methodology for characterizing environmental stressors on a living system via genetic profiling and hallmarks the use of human explants as an experimental model for assessing laser-induced bioeffects at the cell and molecular level. Additionally, we offer 3 conceptual cartoons outlining our vision for the future progress of laser bioeffects research, metabonomic risk assessment modeling and knowledge building from laser bioeffects data.

BACKGROUND

In the interest of brevity the reader is referred to USAFA-TR 2004-01 for the background.

MATERIALS AND METHODS

Explant procurement and processing: General overview

Tissues were received as a tissue donor gift through the Rocky Mountain Lion's Eye Bank who accomplishes all of the donor consent paperwork. Posterior globes of both eyes were harvested 8 hours post time of death and put into a 50 ml vial with approx. 25 ml of buffered saline. The tissue was transported directly to tissue culture lab where the vitreous humor and retina were mechanically removed. Then the RPE still attached to the sclera were cut into 3-5 mm square pieces. The pieces were then placed into 96 well microtiter plates (1 per well) with 150 microliters (ul) of the media (DME/F12 with 10% FBS plus antibiotics) and cultured at 37 degrees C in 5% CO2 until re-plated for

exposure. In a fresh 96 well plate the pieces were placed RPE side up centered in the well, in 50 ul media (just covers the explant) to be exposed. Explants were kept at 37 degrees until they were transported in a pre-warmed insulated box to the laser lab and exposed at room temperature in the plates on an X-Y translation stage one well at a time as quickly as possible to minimize temperature fluctuations then returned to the incubator after stereoscopic examination and the additional 100 ul of warm media. At the desired time post exposure, RPE was mechanically removed from the sclera and collected in microcentrifuge tubes, labeled and frozen at -65 degrees C. Samples were shipped frozen to the vendor with approx. 10 lbs of dry ice via overnight delivery. We accepted donors age 65 years or younger, either sex, with no mitigating ocular or retinal pathology such as glaucoma, diabetic retinopathy, retinitis pigmentosa, etc.

This report provides the results of two gene expression experiments. The first was a 532 nm, nanosecond pulse width exposure designated as N2. The second was a 1064 nm, picosecond pulse width exposure designated as P4.

Donor:

The RPE tissue donor for N2 was a 65 year old Caucasian, blue eyed, male that died of cancer. The RPE tissue donor for P4 was a 41 year old Caucasian, blue eyed, female that died of cancer. No ocular pathologies were noted.

Explant preparation: See USAFA-TR-2004-01

Laser: Equipment Used for N2

Laser (Nd:YAG)

Coherent Infinity XPO Laser

Power Meter

Scientech Power Meter model S310

Detector Head

Scientech model PHDX50 nmLaser model LS055S3W8

Shutter Controller

nmLaser model CX2450

Velmex XY Stage

model NF90-2

Laser: Equipment Used for P4

Laser (Nd:YAG)

EKSPLA, model SL312T, serial number 017

Power Meter Detector Head Molectron OM4001 power meter, serial number 136C J50 Detector Head, with diffuser, serial number 1518B

Shutter

nmLaser model LS055S3W8

Shutter Controller

nmLaser model CX2450

Velmex XY Stage

model NF90-2

In both exposures the pulse energy was determined by placing a power meter on the x-y translation stage (the site of target exposure) and dividing the measured average power by

the pulse repetition rate. This method was considered adequate since pulse-to-pulse energy typically varied less than 10%. The beam profile is a "top hat" with less than 5% variation across the wave front.

Laser-light exposure:

For procedures see USAFA-TR-2004-01. In the table below are the exposure parameters for the experiments reported herein.

N2	P4
532	1064
508	1150
50.8 ± 1.2	115 ± 5
3.0 ns	170 ps
3251	3220
1.69×10^7	6.76×10^8
108	244
6.4	2.8
10	10
6 mm	6 mm
18.0	40.7
	532 508 50.8 ± 1.2 3.0 ns 3251 1.69 x 10 ⁷ 108 6.4 10 6 mm

Total incident energy (TIE) is defined as the amount of laser-light energy that was delivered to the 6 mm well containing the RPE explants. Abbreviations: nmnanometer; m-meter, mm-millimeter, ns-nanosecond; mJ-milliJoule; mW-milliWatt; FWHM-Full Width Half Max; Hz-Hertz; sec-second; W-watt; enatural log.

Laser exposure of Human RPE Explants

The Nd:YAG laser light exposure regimen was based on empirical data (not shown) that established cell viability after a range of laser exposures. The exposure described above for treatment N2 was calculated to be 1.8 k J/m² which is about 10% of the MVL value and approximately 65% above the MPE for the pulse width and wavelength considered (Sliney and Wolbarsht, 1980 and ANZI Z136.1-2000 Table 5a). The exposure described above for treatment P4 was calculated to be 4.1 k J/m² which is about 16% of the MVL value and approximately 20% above the MPE for the pulse width and wavelength considered (Sliney and Wolbarsht, 1980 and ANZI Z136.1-2000 Table 5a)

In experiment N2 the cells were exposed to either 1) sham exposed to no laser-light (beam blocked upstream), or 2) 64 pulses of 532 nm visible laser-light. Each pulse containing 50.8 mJ \pm 1.2 mJ (on average) of energy was delivered to a microtiter plate well 6 mm in diameter containing 50 microliters of medium. In experiment P4 the cells were exposed to either 1) sham exposed to no laser-light (beam blocked upstream), or 2) 28 pulses of 1064 nm visible laser-light. Each pulse containing 115.5 mJ \pm 5 mJ (on

average) of energy was delivered to a microtiter plate well 6 mm in diameter containing 50 microliters of medium. See Figure 2 in USAFA-TR-2004-01 for a general overview of the experimental procedures.

Exposed RPE collection

Sample N2 was harvested 24 hours post-exposure for gene chip analysis; while sample P4 was harvested at 12 hours post-exposure. A "C" beginning the sample designation (i.e. CP4 or CN2) indicates the control sample for comparison. The "HX" designation indicates the use of human explanted tissue as the experimental model. See USAFA-TR-2004-01 for further procedural details.

Oligonucleotide Microarray Description Protocol and Analysis:

See USAFA-TR-2004-01.

For a complete listing of sequence sources and human array design the reader should visit Affymetrix's website at www.affymetrix.com, Technical Note: Array Design for the GeneChip Human Genome U133 Set.

RESULTS

The results (Appendix A and B) of a gene expression microarray are expressed in fold change in expression for one gene in the control versus the experimental samples. For example, if gene YFG is expressed four times greater in the treated cells than in the sham exposed controls, it would show a fold change of positive four (4) in Appendix A that functionally means that gene YFG mRNA was found in 4 times greater concentration in the treated cells than in the controls. Thus, we conclude that the treatment induced the genetic expression of gene YFG four times greater in the experimentally treated cells than in the shame treated cells, presumably in response as the biological effect of the treatment. Conversely, if the YFG mRNA is 4 fold less in the experimental sample that in the control then a value of -4.0 fold is calculated. The assignment of the plus or minus designations on Appendix A is a function of the algorithm in the software used to calculate the fold change. In the context of understanding the significance of fold change or fold induction of a gene, the analysis software calculates a 95% confidence level of fold change for each experiment. For this set of hybridizations labeled N2 and P4 the confidence was calculated to be +/-1.2 for both.

Appendices A and B presents the most pertinent genes (at or above the absolute value for significance) listed in rank ordered by absolute fold change minus to plus at or above the significance value. To help clarify the interpretation of this appendix the following heading explanations are offered. Probe set: the listed name of the gene being probed. Control probe sets have been deleted from the data set in Appendix A. All signals in Appendix A have passed the quality control standards established by the manufacturer. The internal controls are used by Affymetrix to calibrate the array and as quality control

elements. Control signal: the balanced (adjusted for background) signal strength for the control sample. Exptl Signal: the balanced (adjusted for background) signal strength for the experimental sample. Control vs Exptl Fold Change: the fold change based on the comparative signal strength of the control RPE sample as compared to the experimental. This is the fold change value that is used as the endpoint value, and for further analysis in the interpretation of the differential gene expression microarray results for the designated genetic elements listed under "Probe set." Description: a brief description of the gene or EST that is represented in the probe set. The appendix obviously contains only a portion of the total number of elements probed and only those whose absolute fold change was at least at the minimum significance level or higher that has been calculated to be at or above the statistical significance of 95%.

For experiment N2 a quick survey of the Fold Change (Figure 1), Variable Bin Histogram (Figure 2) and Differential Expression Scatter Plot (Figure 3) (internal controls are not in the graph data set) and Appendix A yields the observation that RPE mRNA was above 1.2 absolute fold change in 146 of the approximately 22, 000 (approximately 0.7%) probe elements on the GEM. Of those 77 (0.4% of the total possible elements and 52.7% of the significantly expressed elements) were up-regulated. The number of genes whose expression was down regulated was markedly less. 68 (0.3% of the total possible elements and 46.6% of the significantly expressed elements) genes were down-regulated at or above significant levels. In summary, the number of significant changes in gene expression was approximately equal in the up-regulated direction versus down-regulated direction, but the greatest magnitude of change for single genes was up-regulation with over two times greater fold change.

For experiment P4 a quick survey of the Differential Expression Scatter Plot (Figure 4) (internal controls are not in the graph data set) and Appendix B yields the observation that RPE mRNA was above 1.2 absolute fold change in 408 of the approximately 22, 000 (approximately 1.9%) probe elements on the GEM. Of those 324 (1.5% of the total possible elements and 79.4% of the significantly expressed elements) were up-regulated. The number of genes whose expression was down regulated was markedly less. 83 (0.4% of the total possible elements and 20.3% of the significantly expressed elements) genes were down-regulated at or above significant levels. In summary, the greatest number of significant changes in gene expression was in the up-regulated direction (nearly 4 times), and the greatest magnitude of change for single genes (over 2 times) was also up-regulation.

DISCUSSION

Selected genes and ESTs from Appendices A and B can be reviewed as to the physiological function and/or biological marker for which they are known whenever possible. Also note that the appendices contain ESTs that were differentially regulated by the cells post laser exposure. As of the date of the experimental analysis, the functions of the genes related to the above ESTs were not known. But recent updates of the NCBI genomic database, several ESTs in the appendices have been assigned

genetic/physiologic functions. However, other EST's that were differentially regulated functions remain unknown thus remain fertile ground for future exploration and analysis. Gene functions can easily be located through a PubMed query in the NCBI searchable database format found in the appendices.

These two experimental data sets are offered as a contribution to the continuing efforts in understanding the response of RPE to the exposure of high energy pulsed laser-light exposure using gene expression profiling 12 hours and 24 hours post-exposure. In the multi-dimensional hyper-volume of laser settings versus various tissues' response and time of response post-exposure, these can provide insights at specific matrix data points to possible perturbation to cellular physiology to include aspects of damage, repair and decreased/absent/rescued function.

Closing

As a closing comment we offer the following observation: These are the last gene expression profile experiments using Affymetrix GeneChip technology done in the Laser and Optics Research Center, Department of Physics, United States Air Force Academy. We highly recommend that this type of work, started here, be continued to aid in understanding the effect of laser-light exposure on affected human tissue. This use of living human cadaver donor tissue marks a major step forward toward assessing the cellular perturbation to be expected in the human organism and should be strongly considered as an experimental model until such time as the tissue microarray and organotypic model technologies more closely approximate the in vivo human response. We also suggest the employment of various statistical modeling techniques such as Taguchi's to establish the relevant orthogonal contrasts in the multi-dimensional hypervolume of laser settings versus biological response endpoints to rationally define the pertinent experimental data points to appropriately model laser-tissue interaction. In the context of more in depth analysis of the gene expression data, numerous higher order software platforms offer advance analyses, some employing artificial intelligence capabilities. As a closing thought we are attaching our concepts of future laser bioeffects research directions (Figure 5), a metabonomic risk assessment model of laser tissue interaction (Figure 6), and some suggestions for the transition to knowledge building/modeling from data collection (Figure 7) in laser bioeffects research.



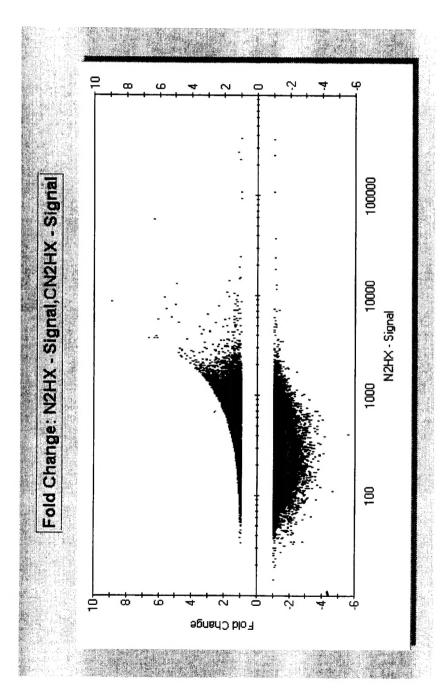


Figure 2.

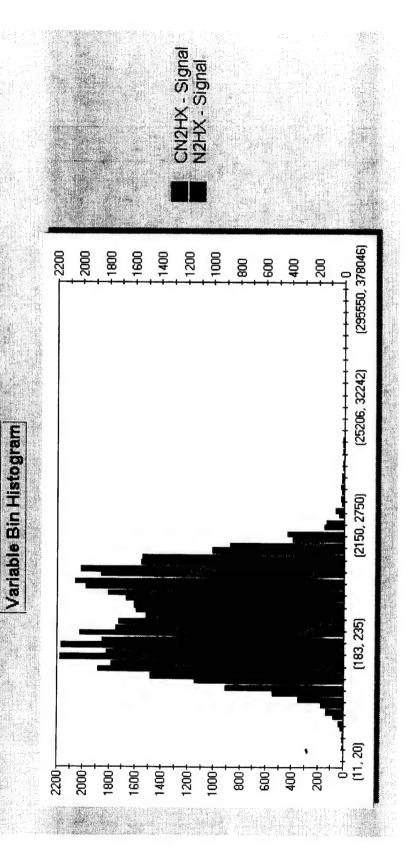
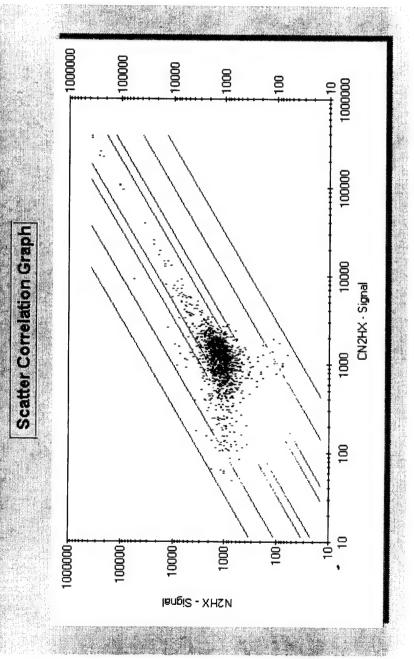


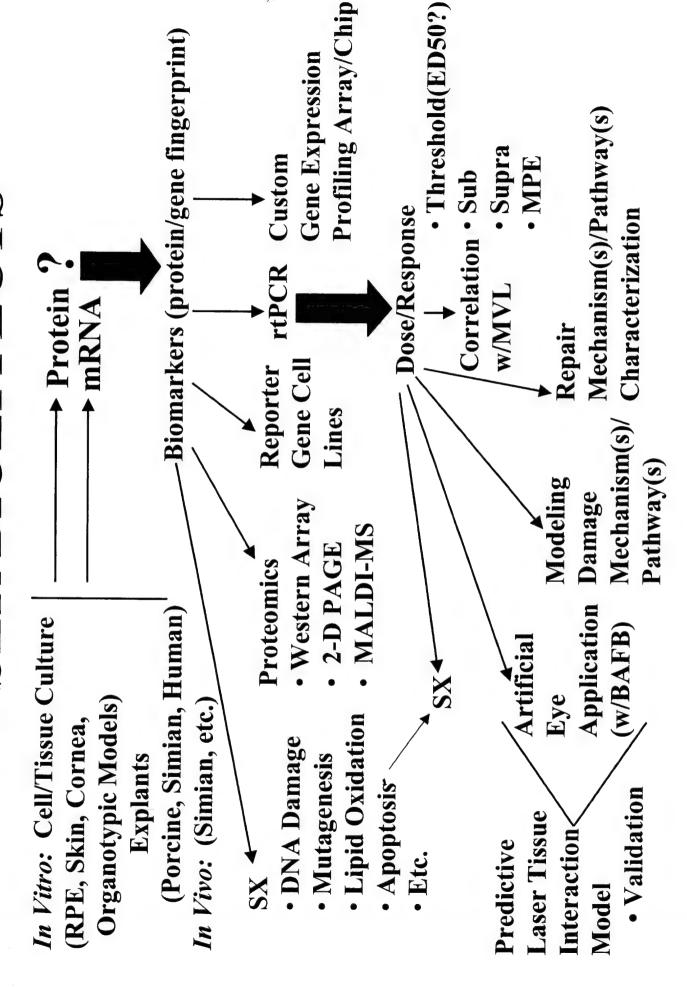
Figure 3.



Fold Change: P4HX12 - Signal, CP4HX12 - Signal 10000 P4HX12 - Signal 1000 Fold Change

Figure 4.

LASER BIOEFFECTS



METABONOMIC RISK ASSESSMENT

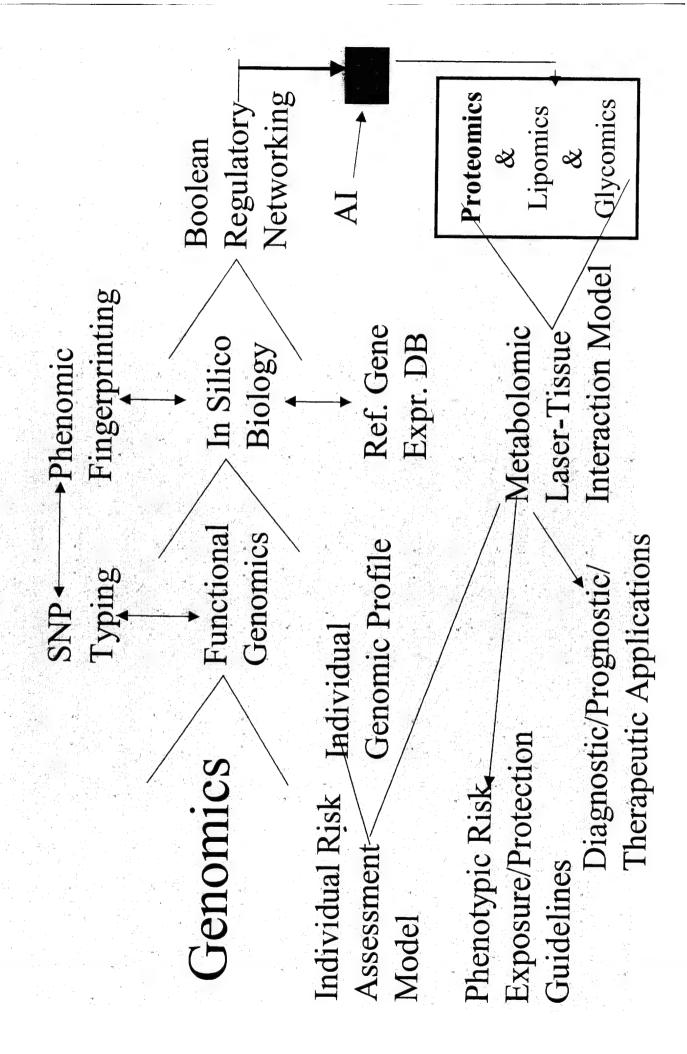


Figure 6.

KNOWLEDGE BUILDING

(Transition from data collection)

- Statistical Design
- Multi-Dimensional Hyper-Volume (laser settings)
- Orthogonal Contrasts Drive Experimental Design
- Biological Endpoints
- Bioinformatics
- Integrative Platform (data mining)
- Central Repository
- Biomarker Discovery/Validation
- Retrospective Analysis-MVL
- Clinical data correlated to histo/cell/molecular data
- Exposures/Metabolic Homology/Bridging Experiments
- Collaboration=Max. Efficiency/Integration/Holism

Description	Consensus includes gb:RE045142 /FEA=EST /DB_XREF=gi:342943 /DB_XREF=est:wk66h11.x1 /CI Consensus includes gb:RE045142 /FEA=EST /DB_XREF=gi:382195 /DB_XREF=est:wc66h11.x1 /CI gb:AF115403.1 /DEF=Homo sapiens Ets transcription factor ESE-Zb mRNA, complete cds. /FEA=MCOnsensus includes gb:A4652420 /FEA=EST /DB_XREF=gi:3873434 /DB_XREF=est:p32g06.x1 /CLI gb:A4056220 /CLI Consensus includes gb:A465320 /FEA=EST /DB_XREF=gi:345202 /DB_XREF=est:p32g06.x1 /CLI gb:NM_006113.2 /DEF=Homo sapiens vav 3 oncogene (V403), mRNA. /FEA=mRNA /GEN=HAV3 /PB gb:NM_006113.2 /DEF=Homo sapiens T-box 6 (TBX6), mRNA. /FEA=mRNA /GEN=HAV3 /PB gb:NM_006408.1 /DEF=Homo sapiens T-box 6 (TBX6), mRNA. /FEA=mRNA /GEN=HAV3 /PB gb:NM_006408.1 /DEF=Homo sapiens T-box 6 (TBX6), mRNA. /FEA=mRNA /GEN=HAV3 /PB gb:NM_006408.1 /DEF=Homo sapiens rypothetical protein FL/12671 (FL/12671), mRNA. /FEA=mRNA /GEN=HAV3 /PB gb:NM_00660.1 /DEF=Homo sapiens hypothetical protein FL/12671 (FL/12671), mRNA. /FEA=mRNA /GEN=HASA/1454 gb:NM_006806.1 /DEF=Homo sapiens hypothetical protein (MY047), mRNA. /FEA=mRNA /GEN=HASA/1454 gb:NM_006806.1 /DEF=Homo sapiens RY047 protein (MY047), mRNA. /FEA=mRNA /GEN=HASA/1454 gb:NM_006806.1 /DEF=Homo sapiens RY047 protein (MY047), mRNA. /FEA=mRNA /GEN=HASA/1454 gb:NM_006806.1 /DEF=Homo sapiens RY047 protein (MY047), mRNA. /FEA=mRNA /GEN=HASA/1454 gb:NM_006806.1 /DEF=Homo sapiens CDNA. ? L1/12267 is, clone COL05579. /FC Consensus includes gb:A8020690.1 /DEF=Homo sapiens CDNA. ? Glone RPS-11857 from /GHO-E-Homo sapiens CDNA. ? Glone RPS-11857 from COL05579. /FC Cluster Incl. A408288:th78c09.x1 /DEF=Homo sapiens CDNA. ? Glone RPS-11857 from Cludes gb:A802364.1 /DEF=Homo sapiens CDNA. 3 end /clone=iMAGE-2124784 /clone Gonsensus includes gb:A8023564.1 /DEF=Homo sapiens CDNA. 3 end /clone=iMAGE-2124784 (clone end Consensus includes gb:A8023564.1 /DEF=Homo sapiens CDNA. 3 end /clone=iMAGE-234784 (clone end Cutsensus includes gb:A8023564.1 /DEF=Homo sapiens RNNA for KIAA062358303 clone end Cutsensus includes gb:A8023564.1 /DEF=Homo sapiens RNNA
CN2 vs N2 Fold Change	2.84 2.75 2.75 2.75 2.76 2.17 2.17 2.17 2.11 2.11 2.11 2.11 2.11
N2HX Signal	325.2 989 822.4 980.6 527.9 1033.6 1023.7 837.8 714.1 519.2 1268.9 1440.9 962.6 699.7 970.3 629.3 1258 2176.6 971.5 1920 1025.8 3401.8 1556.6 2181.2 612.4 845.8
CN2HX Signal	922.1 2715.5 2057.1 2212.3 1145.2 2178.8 2276.8 1971.2 1584.6 1343.5 932.7 2260.9 2545.9 1636.1 1182.6 1613.4 1040.5 2056.3 3438.9 -1527.2 3007.9 1566.8 5209.2 2283 1673.7 2283 1673.7 2283 1673.7 2283 1573.8 1573.8 1580.8 2728.4
Probe set	212917_x_at 217715_x_at 220625_s_at 220625_s_at 214421_x_at 215823_x_at 201060_x_at 201060_x_at 21807_at 203758_at 203758_at 203758_at 203758_at 204112_x_at 204112_x_at 204252_at 204252_at 217097_s_at 204252_at 2127097_s_at 212097_s_at 212097_s_at 212095_at 212095_at 21222_at 212788_s_at 207788_s_at 207788_s_at 207788_s_at 207788_s_at 207788_s_at 214902_x_at 214902_x_at 214902_x_at 214902_x_at 212896_at 212896_at 220290_at

gb:NM_021943.1 /DEF=Homo sapiens hypothetical protein FLJ13222 (FLJ13222). mRNA_/FEA=mR	gb:AF311940.1 /DEF=Homo saplens pregnancy-associated plasma preproprotein-A2 mRNA, comp	governing 14765.1 /DET=Homo sapiens translocase of outer mitochondrial membrane 20 (yeast) hor ob-NM nonzte 4 /DEE=Homo continued to the conti	Consensus includes the ARGA 4 Are Language Consensus includes the Area of Area 4 Area and Area 4 Area and Area	ab:NM 000982 1 /DEF=Homo canione ribocomal action of the control o	Consensus includes ab: N57784 /EEA-ECT /nb VPTT	Cluster Incl. A1783924-trane11 v1 Home continue and a	Consensus includes ab AWE13387 /EEA-EET IND. VALT.	Consensus includes ab: A1246250 /FEA-ES1 / UB_XREF=g1:/318573 / UB_XREF=est:hh71e04.x1 / C	Consensus includes ab AASA6442 /EEA-EET /DB_XREF=gi:4083556 /DB_XREF=est:qp50c06.x1 /CL	gb:NM 001003.1 /DEF=Homo caniene ribosomal material 128/4892 /DB_XREF=est:0e29d06.s1 /C	db:NM 017766.1 /DFF=Homo earliers handhation matein F. Jacob VT (KPLP1), mRNA, /FEA=mRNA /C	Consensus includes ab AF222604 4 (hee-users protein FL)20321 (FL)20321), mRNA. /FEA=mR	Consensus includes ab: AW474158 /FFA=EST /NB YDEE==::704202 /NB YDEE	Consensus includes ab AW974816 /EA-EST /DB ANET-9://044264 /DB XREF=est:xy11f01.x1 /CI	gb:NM 024430.1 /DEF=Homo capiene proline coring through the AREF=65t;EST386921 /U	db:NM 005697.2 /DFF=Homo capiene exercitors of the contraction of the contraction of the contraction of the contraction of the capiene exercitors of the contraction of the capiene exercitors of the ca	ob:NM 000353 1 (DEE=Home secretory carrier membrane protein 2 (SCAMP2), mRNA. /FE	Consensus includes ah-AR044007 4 (her-nome aminotransferase (TAT), nuclear gene encoding mit	db:BC002513.1 /DFE=Homo canions Authorities and a contraction of the c	ab: BC004239 1 /DEE=Homo earling immail 1 / 2011 1 / 2011 1 / 2011 1 / 2011 1 / 2011 1 / 2011 2 / 2011 1 / 2011 2 / 2011	Consensus includes ab AF007146 1 (DEE-Lows)	Consensus includes ab-Al 021927 / DEC-Limman DNA	Consensus includes oh-All444530 /EEA-EET in vortrassississississississississississississi	Consensus includes ab: AK024533 4 (DEE=Home content of the content	gb:D29640.1 /DEF=Human mRNA for KIAAAA61 *********************************	Consensus includes the Resettate (real-est for the test) and the rest of the test of the t	gb:NM 014478.1 /DEF=Homo sanians calcifonin and calcifold	Consensus includes ab Alkandale feed and the very mentioned peptide-receptor component protein	Cluster Incl. X60592-Himan Churto ment for a contract of the Churto ment for a contract of the Churto ment for a contract of the contract of t	gb:NM 002993.1 /DEF=Homo saniane email inducible autobined in the control of the	Consensus includes ah-1132169 (DEE-Human and 12 Lain a	gb:AB037703.1 /DEF=Homo saniene SID1-delta mbNA for callagen type XI (COL11A2) gene, co	Consensus includes gb:X14362.1 /DEF=Human CR1 mRNA for C3bC4b receptor secreted form. /FE
4.1.	4.1-			-1.36	-1.36	-1.35	-1.34	-1.33	-1.33	-1.32	-1.32	-1.31	-1.3	-1.3	-1.29	-1.29	-1.28	-1.27	-1.26	-1.26	-1.25	-1.25	-1.25	-1.24	-1.23	-1.23	-1.23	-1.23	-1.23	-1.22	-1.22	-1.21	-1.2
1358.6	1499	923.7	2006.7	1155.6	1458.4	2838.1	943.1	930.3	1780.5	1974.5	2204.7	7096.3	2462.1	3629.1	922.6	1781.5	2235.8	1046.8	901.9	1412.7	1111.4	1548.7	2076.8	910	1269.9	1417.9	1448.8	2397.5	2635.7	932.4	2583.4	1064.1	1326.5
1899	2076.6	1272	2753.3	1571.5	1986.5	3832.8	1261.3	1237.6	2376.8	2612.7	2899.9	9297	3189.9	4701.1	1194.6	2299.2	2861.6	1326.9	1136.1	1777.1	1388.9	1932.6	2606	1127.2	1563.4	1740.1	1780.4	2957.5	3243.7	1133.4	3147.8	1285	1593.5
218020_s_at	200662_s_at	208020_s_at	212261_at	200012_x_at	222370_x_at	56197_at	217497_at	213226_at	213798_s_at	200763_s_at	220015_at	216187_x_at	215019_x_at	222329_x_at	219938_s_at	218143_s_at	206916_x_at	214034_at	201143_s_at	210927_x_at	215478_at	217406_at	215607_x_at	214869 x at	210840_s_at	214135_at	203899_s_at	213612_x_at	35150_at	206336_at	216993_s_at	211115 x at	217484_at

Consensus includes gb:BG029530 /FEA=EST /DB_XREF=gi:12418626 /DB_XREF=est:602297090F1 Cluster Incl. AB020648:Homo sapiens mRNA for KIAA0841 protein, partial cds /cds=(0,1925) /gb=p Consensus includes gb:X68485.1 /DEF=H.sapiens mRNA for A1 adenosine receptor. /FEA=mRNA, gb:NM_004223.1 /DEF=Homo sapiens ubiquitin-conjugating enzyme E2L 6 (UBE2L6), mRNA. /FEA:gb:NM_013235.1 /DEF=Homo sapiens putative ribonuclease III (RNASE3L), mRNA. /FEA=mRNA /G	gb:NM_018004.1 /DEF=Homo sapiens hypothetical protein FLJ10134 (FLJ10134), mRNA. /FEA=mR gb:NM_01329.1 /DEF=Homo sapiens GC-rich sequence DNA-binding factor candidate (GCFC), ml Consensus includes gb:AL137312.1 /DEF=Homo sapiens sapiens mRNA: cDNA DKF7n761k23431 (from all	gb:NM_020117.1 /DEF=Homo sapiens hypothetical protein FLJ10595 (FLJ10595), mRNA. /FEA=mR Consensus includes gb:AK023757.1 /DEF=Homo sapiens cDNA FLJ13695 fis, clone PLACE200012 gb:NM_000922.1 /DEF=Homo sapiens bhosphodlesterase 3R_CGMP-inhibited (phe 2p), mpnA_/FE	gb:NM_001530.1 /DEF=Homo sapiens hypoxia-inducible factor 1, alpha subunit (basic helix-loop-h gb:BC000268.1 /DEF=Homo sapiens, proteasome (prosome, macropain) subunit, beta type, 2, clon	gb:nm_000923.1 /DEF=Homo sapiens phosphodiesterase 4C, cAMP-specific (dunce (Drosophila)-I Consensus includes gb:AK023837.1 /DEF=Homo sapiens cDNA FLJ13775 fis, clone PLACE400036	Consensus includes gb:N32526 /FEA=EST /DB_XREF=gl:1152925 /DB_XREF=est:yy11f04.s1 /CLOf	gb:NM_024881.1 /DEF=Homo sapiens hypothetical protein FLJ14251 (FLJ14251), mRNA. /FEA=mR gb:NM_017627.1 /DEF=Homo sapiens hypothetical protein FLJ14251 (FLJ14251), mRNA. /FEA=mR	Consensus includes gb:Al688418 /FEA=EST /DB_XREF=gi:4899712 /DB_XREF=est:wc94h03.x1 /CL	Consensus includes gb:BG249565 /FEA=EST /DB_XREF=gi:12759381 /DB_XREF=est:602319636F1 Consensus includes gb:AB023215.1 /DEF=Home sanions mPNA for KIAAA0000 material and the consensus includes gb:AB023215.1 /DEF=Home sanions mPNA for KIAAA0000 material and the consensus includes gb:AB023215.1 /DEF=Home sanions mPNA for KIAAA0000 material and the consensus includes gb:AB023215.1 /DEF=Home sanions mPNA for KIAAA0000 material and the consensus includes gb:AB023215.1 /DEF=Home sanions mPNA for KIAAA0000 material and the consensus includes gb:AB023215.1 /DEF=Home sanions mPNA for KIAAA0000 material and the consensus includes gb:AB023215.1 /DEF=Home sanions mPNA for KIAAA0000 material and the consensus includes gb:AB023215.1 /DEF=Home sanions mPNA for KIAAA0000 material and the consensus includes gb:AB023215.1 /DEF=Home sanions mPNA for KIAAA0000 material and the consensus includes gb:AB023215.1 /DEF=Home sanions mPNA for KIAAA0000 material and the consensus includes gb:AB023215.1 /DEF=Home sanions mPNA for KIAAA00000 material and the consensus includes gb:AB023215.1 /DEF=Home sanions material and the consensus includes gb:AB02515.1 /DEF=Home sanions material	gb:AF261137.1 /DEF=Homo sapiens HT031 mRNA, complete cds. /FEA=mRNA /PROD=HT031 /DB Consensus includes ab:AK023783.1 /DEE=Homo canions on A FI 143724.	Consensus includes gb: A749101 / FEA=E31 /DB XREF=gl:2789059 /DB XREF=est:ny11d02.s1 /C	Consensus includes gb:BE046461 /FEA=EST /DB_XREF=gi:8363514 /DB_XREF=est:hn47g05.x2 /C	Consensus includes gb::AR0z3843.1 /DEF=Homo sapiens cDNA FLJ13781 fis, clone PLACE400046: gb::NM: 031221.1 /DEF=Homo sapiens hypothetical protein EKSG63 (EKSG62)	gb:BC006325.1 /DEF=Homo sapiens, G-2 and S-phase expressed 1, clone MGC:12560, mRNA, com	Consensus includes gb:NM_005395.1 /DEF=Homo sapiens postmelotic segregation increased 2-lik Cluster Incl. W07773:zb03g04.r1 Homo sapiens cDNA, 5 end /clone=IMAGE-301014 /clone_end=5
127 121 121 122 122 122	1.22	1.23 1.25 1.25	1.26	1.29	<u> </u>	1.31	1.35	1.35	1.36	1.36	1.39	 4.	1.41	1.42
1685.1 3560.4 1462.8 1937.1 1269.9	1426.8 1708.3 4515.3	2504.9 1512.8 2110.3	2154.2 5656.3	1877.9 1925.3	2928.8	8986.1 2466.5	899.9 1337.6	2096.6 1714.5	1872.5 2557.5	7138 4958 8	925	8319.7	2862.8	1361.5 5368.6
2019.8 4267.1 1209.3 1602.4 1044.9	1165.6 1402.6 3715.8	2031.2 1206.8 1688.9	1704 4464.7	1460.7	2235.8 3831.3	6875.1 1864.1	666.3	1552 1262.1	1374.9 1875.3	5238.3 3601.5	3502 6	5959.6	2034.3	3787.7
203297_s_at 36888_at 216220_s_at 201649_at 218269_at 204517_at	219410_at 221158_at 215383_x_at	217810_x_at 216159_s_at 208591_s_at	200989_at 201404_x_at 206792_v_at	212208_at 220352_x_at	212607_at 215588_x_at	220796_x_at 207783_x_at	s_at at	213507_s_at 214672_at	209927_s_at 215604_x_at	214022_s_at 121_at	215303_at 215179_x_at	208120_x_at	211040_x_at	55705_at

Consensus includes on AK024789 4 IDEE-Lown continue of the Consensus includes on the Consensus i									gb:NM 005926.1 /DEF=Homo sapiens microfibrillar-secociated material distance in a dist	Consensus includes ab: AL581768 /FFA=FST /IDB XRFE=ai:12949002 /IDB XDFE=ai:12049002 /IDB XDFE=ai:12049002 /IDB XDFE=ai:120490002 /IDB XDFE=ai:1204900002 /IDB XDFE=ai:1204900002 /IDB XDFE=ai:1204900002 /IDB XDFE=ai:1204900002 /IDB XDFE=ai:1204900002 /IDB XDFE=ai:1204900000000000000000000000000000000000	Consensus includes gb:X58851 /DEF≂Human MLC1emb gene for embryonic mysein alle include	Consensus includes gb:BF448041 /FEA=EST /DB XRFF=ni-11513102 /DB XBFF=ni-1513102 /DB X	gb:NM_014886.1/DEF=Homo saplens hypothetical protein (YR-29), mRNA /FFA=mbna /SEN=VP /	Consensus includes qb:BG498776 /FEA=EST /DB XRFF=11-1346029 /DB VDEE=14-6025131201-1	gb:NM_006237.1 /DEF=Homo sapiens POU domain. class 4. transcription factor 1 /DOI14641	gb:AF195514.1 /DEF=Homo sapiens VPS4-2 ATPase (VPS42) mRNA complete and the complete and th	gb:NM_014928.1 /DEF=Homo sapiens KIAA1046 protein (KIAA1046) mRNA /FFA=mBNA /GEN=LVIA	gb:NM_020114.1 /DEF=Homo sapiens acrosomal vesicle protein 1 (ACRV1). transcript variant 9 mp	gb:NM_031207.1 /DEF=Homo saplens hypothetical protein HT036 (HT036), mRNA /FEA=CDS /GEN	gb:NM_005502.1 /DEF≍Homo sapiens ATP-binding cassette, sub-family A (ABC1), member 1 (ABC	gb:AF154847.1 /DEF=Homo sapiens 33 kDa Vamp-associated protein (VAMP) mRNA, complete cds	go:Arubas10.1 /DEF=Homo sapiens sodium bicarbonate cotransporter (NBC) mRNA, complete cds	db:NM 012245 1 /DEF≡Home sanions ctri interpacting processing control of the con	db:NM 017618.1 /DEF=Homo sapiens hypothetical protein El 19006 /El 190000 /El 190000	gb:AF130054.1 /DEF=Homo sapiens clone FI R4816 PRO1252 mbnA commissional reference in the commis	gb:NM 014183.1 /DEF=Homo sapiens HSPC162 profein (HSDC162), mbNA /FEA	gb:NM_018097.1 /DEF=Homo sapiens hypothetical protein FI. 110460 /FI. 140460 / mbys /FFA	gb:NM_024906.1 /DEF=Homo sapiens hypothetical protein El 121032 /El 121032 / ED 121032 / ED 121032	Consensus includes qb:AL137798 /DEF=Human DNA sequence from closs DBE 4493444	Consensus Includes gb:AL524262 /FEA=EST /DB XRFF=qi-12787755 /DB XPEE=_cet.Al =24762 /cl	gb:D89377.1 /DEF=Homo saplens mRNA for MSX-2. complete cds /FFA=mRNA /DDD=MSY 3 /DD	gb:AF087847.1 /DEF=Homo sapiens GABA-A receptor-associated profein like 1 (GABADAPI 1)	Consensus includes gb:AW276646 /FEA=EST /DB_XREF=gi:6663676 /DB_XREF=est:xr17f12.x1 /CL	
1.42	1.43	1.43	1.44	1.44	1.46	1.47	1.48	1.51	1.52	1.53	1.54	1.54	1.55	1.56	1.58	1.59	1.59	1.6	1.62	1.66	1.72	1.74	1.75	1.76	1.8	1.85	1.9	1.9	1.94	7	2.01	2.08	2.09	
7190	5675.8	10405.8	1693.4	2145.1	6154.8	4313.7	4012.4	2091.5	2252.8	3412.4	1706.5	1817.6	2536	2899.4	1648.6	1449.5	1976.3	1838.9	1427.6	1002.4	3406	14071.5	2182.3	5918.3	4248.9	3279.7	4959.7	10811.6	1516.9	5764.6	1500	1436.2	2086	
5050.3	3960.6	7271.8	1179.8	1491.5	4210.6	2925.9	2704.1	1387.3	1483.7	2227.4	1106.7	1180.3	1634.7	1858.2	1046.6	606	1245.5	1146.1	7.188	603.2	-2020 1	8100.3	1246.3	3369.8	2358.7	1771.8	2615.6	5702.1	783.7	2887.1	746.5	690.2	997.9	
214715_x_at	210686_x_at	209057_x_at	215726_s_at	219206_x_at	215628_x_at	206936_x_at	211600_at	204246_s_at	203406_at	212639_x_at	216054_x_at	212735_at	201922_at	212284_x_at	206940_s_at	218171_at	203480_s_at	207990_x_at	26.1435 X at	203504_s_at	210739 x at	205370 x at	201575_at	208246_x_at	211452_x_at	217918_at	220071_x_at	220232_at	213382_at	213835_x_at	210319_x_at	208869_s_at	213936_x_at	

Cluster Incl. R61374:yh15e02.s1 Homo sapiens cDNA, 3 end /clone=IMAGE-37665 /clone_end=3 /(Consensus includes gb:L13779.1 /DEF=Homo sapiens (clone H16) sperm surface protein PH-20 m gb:AF083420.1 /DEF=Homo sapiens brain-specific STE20-like protein kinase 3 (STK3) mRNA, com gb:NM_003204.1 /DEF=Homo sapiens nuclear factor (erythroid-derived 2)-like 1 (NFE2L1), mRNA. Consensus includes gb:AA320764 /FEA=EST /DB_XREF=gi:1973113 /DB_XREF=est:EST23183 /UG cluster Incl. X16135:Human mRNA for novel heterogeneous nuclear RNP protein, L protein /cds=(; gb:NM_000998.1 /DEF=Homo sapiens ribosomal protein L37a (RPL37A), mRNA. /FEA=mRNA /GEN gb:BC002456.1 /DEF=Homo sapiens, voltage-dependent anion channel 3, clone MGC:1966, mRNA, gb:NM_016451.1 /DEF=Homo sapiens coatomer protein complex, subunit beta (COPB), mRNA. /FE Consensus includes gb:BE857772 /FEA=EST /DB_XREF=gi:10372131 /DB_XREF=est:7d62a11.x1 //
2.12 2.34 2.57 3.06 3.43 4.98 5.29 5.29 6.34
4775.3 1601.8 2179.2 5302 6436.5 4106.8 12987.4 6016.2 9562.7
2252.2 685 904.2 2062.8 2102.2 1196.1 2608.6 1136.5 1664.1
44783_s_at 216989_at 208855_s_at 200759_x_at 200095_x_at 35201_at 201429_s_at 20845_at 201358_s_at 214041_x_at

		Consensus includes nh.Al 133386 /DEE-Himman DNA comments	gb:\Mi 006924.1 /DEF=Home caniene calicina factor againment in 1916.	gb:NM 005931.1 /DEF=Home ganiene MHC class I malymostic and in the	Consensus includes ab AF161382 4 / INFE=Homo capitate USDCCC	Consensus includes ab: BF440025 /FFA=FST /np. YPEE=_::-445540 /np. YPT.	gb:NM 001449.1 /DEF=Home sanione four and a balf 1 M domeins 4 /7111 3	gb:NM 006198.1 /DEF=Home sapiens Purkiple cell protein 4 (bcb4)	gb:NM 005410.1 /DEF=Home saniens selencerotein B. plasma. 4 (SEDB4)	gb:NM 007272.1 /DEF=Homo sapiens chymotrypein C (caldocala) (CTBC)p.14 (cr. CTBC)	ab:NM 007127.1 /DEF=Homo sapiens villin 1 (VII 1) mDNA /EEA	3b:NM 004808.1 /DEF=Homo sapiens N-myristoyltransferses 2 /NMT2	b:NM 001017.1 /DEF=Homo sapiens rihosomal protein \$13 /DD543)DNA //TANA /A	Consensus includes ab: BG034239 /FFA=FST /DR XDEF==1-1-2427239 /DB VDFF	ib:U49396.1 /DEF=Human ionotronic ATP recentor D2Xsh mBNA completed and increased	ib:NM 003756.1 /DEF=Homo saniens elikarvotic translation initiation forting 2017 100 100 100 100 100 100 100 100 100	Consensus Includes ab: Al685944 /FFA=FST /DR XDEE=4: 4897229 /DB VDFT	b:NM 005345.3 /DEF=Homo saniens heat shork 70kh protein 4A (USDA4A)	gb:U43784.1 /DEF=Human mitogen activated protein kinses activated acceptance of the control of t	b:NM 016621.1 /DEF=Homo sapiens hypothetical protein (1 OC51247) TONA (177)	b:NM 014999.1 /DEF=Homo sapiens KIAA0118 protein (KIAA0110) protein (KIAA0110) protein (KIAA0110)	gb:NM 006016.1 /DEF=Homo saniens CD164 antigen etaloguicia (CD464) antigen etaloguicia (CD464)	Consensus includes ab: AW438464 /FFA=FST ///R XPEE=A: 8072770 /// NB VDTT	gb:NM 003851.1 /DEF=Homo sapiens cellular repressor of E4A etimulated according to the control of the control o	b:NM 002923.1 /DEF=Home sapiens requisitor of Garatein signallians 2 4th (2000)	Consensus includes ab: AW170359 /FEA=FST /DR XPEE=#1:6404894 /DB VDFT	b:NM 005907.1 /DEF=Homo sapiens mannocidase alpha class 14 mannocidase alpha class 14 mannocidase alpha class 14 mannocidase alpha class 18 mannocidase alph	b:NM 031207.1 /DEF=Home sanions hypothetical pratein utoos (utoos) and in the sanions hypothetical pratein utoos (utoos)	b:NM 021638.1 /DEF=Homo capiene actin filament accorded actin, (a.c.a.), mkNA. /FEA=CDS /GEN=HT036	Consensus includes ab:AI476267 /FFA=FST /DR XREE=AI:A220242 /DB VDT-	b:NM 012108.1 /DEF=Homo sapiene RCB downetream elanging 4 /DDD 04	gb:NM_014812.1 /DEF=Homo sapiens KIAA0470 gene product (KIAA0470) DNA_/FFA=mRNA /GEN=B	gb:NM_003685.1 /DEF=Homo sapiens KH-type splicing regulatory protein (FUSE binding protein 2) (KHSR
CP4 vs P4	Fold Change	-2.08	-1.79	-1.74	-1.73	-1.72	-1.72	-1.61	-1.6	-1.58	-1.56	-1.56	-1.55	-1.54	-1.52	-1.49	-1.48	-1.48 g	-1.47				-1.43	-1.42 g	-1.42 g	-1.41	-1.4 gl		-1.4	-1.39 C		-1.39 g	-1.38 g
CP4HX12 P4HX12	Signal	628.6	269	644.7	886.6	624.6	1296.5	1470.7	723.3	1062.2	8.929	741.8	5297.4	959.2	826.5	1131.9	613.9	1200.2	805.5	871.8	889.3	2049.2	693.1	759.5	786.8	844.3	759.8	776.4	915	602.8	656.2	692.8	810.5
CP4HX1	Signal	1308.1	1249	1119.8	1537.9	1076.1	2224.9	2372.6	1154	1678.6	1056.1	1159	8197	1480.6	1254.8	1686.1	206	1778.3	1181.7	1275.2	1299.4	2947.3	993.6	1078.7	1118.4	1191	1066.9	1087.8	1279.2	835	910.6	929.6	1119.3
	Probe set	205430_at	201742_x_at	206247_at	213031_s_at	214321_at	201540_at	205549_at	201427_s_at	206297_at	205506_at	205006 s at	200018_at	213513_x_at	210448_s_at	201592_at	213878_at	200799 at	202787_s_at	203278 s at	203885_at	208405_s_at	215203_at	201200_at	202388_at	213319 s at	208116_s_at	221435_x_at	203563_at	204234 s at	220059_at	207719_x_at	204372_s_at

Consensus includes gb:AF191654.2 IDEF=Homo sapiens diphosphoinositol polyphosphate phospholydr gb:U90940.1 IDEF=Homo sapiens cell-type natural killer cells FC gamma receptor IIc3 (FC-gammaRIC) mR gb:U90940.1 IDEF=Homo sapiens cell-type natural killer cells FC gamma receptor IIc3 (FC-gammaRIC) mR gb:U80940.1 IDEF=Homo sapiens bytoothetical protein FLJ11040 (FLJ11040), mRNA. FEA=mRNA (GEN gb:NM_00150.1 IDEF=Homo sapiens hypothetical protein FLJ12895 (FLJ12895), mRNA. FEA=mRNA (GEN gb:NM_00500.1 IDEF=Homo sapiens hypothetical protein FLJ12895 (FLJ12895), mRNA. FEA=mRNA (GEN gb:NM_00500.1 IDEF=Homo sapiens tytoothetical protein FLJ12895 (FLJ12895), mRNA. FEA=mRNA (GEN gb:NM_00500.1 IDEF=Homo sapiens tytoothetical protein CHYRPI), mRNA. FEA=mRNA (GEN FEA=MRNA GONSON) (FEA=EST IDE XREF=gl:302168 IDE XREF=est:G61098.2 Index A [FEA=mRNA GEN FEA=MRNA GEN FOOLSON]. IDEF=Homo sapiens spermidinespermine N1-activitaristates (SAT), mRNA. FEA=mRNA gb:NM_00500.1 IDEF=Homo sapiens protein Misse, "Linked (RRV), mRNA. FEA=mRNA (GEN FEAE) gb:NM_00500.1 IDEF=Homo sapiens protein Misse, "Linked (RRV), mRNA. FEA=mRNA (GEN FEAE) gb:NM_00576.1 IDEF=Homo sapiens protein Misse, "Linked (RRV), mRNA. FEA=mRNA (GEN FEAE) gb:NM_00576.1 IDEF=Homo sapiens thoredoxin-like, 32kD (TNU), mRNA. FEA-mRNA (GEN FEAE) gb:NM_004786.1 IDEF=Homo sapiens thoredoxin-like, 32kD (TNU), mRNA. FEA-mRNA (GEN FEAE) gb:NM_004786.1 IDEF=Homo sapiens thoredoxin-like, 32kD (TNU), mRNA. FEA-mRNA (GEN FEAE) gb:NM_004786.1 IDEF=Homo sapiens chosen service (GONS 10.1 IDEF=Homo sapiens integral membrane protein ZB (ITNZB), mRNA. FEA-mRNA (GEN FEAE) gb:NM_005730.1 IDEF=Homo sapiens integral membrane protein ZB (ITNZB), mRNA. FEAF-mRNA (GEN FEAE) gb:NM_005730.1 IDEF=Homo sapiens chosen serviced gene amplified in osteosarcoma (OS4), mRNA. FEAF-mRNA (GEN FEAE) gb:NM_005730.1 IDEF=Homo sapiens sitely and service (GONS 10.1 IDEF=Homo sa
1.38 1.37 1.37 1.35 1.35 1.35 1.35 1.35 1.35 1.35 1.35
1650.7 759.1 795.2 820.9 1058.5 1285 6373.5 643.3 873.3 1396.1 813.7 3206.2 873.3 1396.1 813.7 3206.2 879.7 169 902.9 802.7 3453.3 980.1 1159.4 1180.2 1195 7758.1 1049.4 11298.2 686.8 703.7 703.7 703.7
1040 1087.6 1124.2 1448.4 1752.5 8659.9 869.2 1181.2 1181.2 1181.2 1172.2 1172.2 1172.2 1172.2 1172.2 1172.2 1172.2 1182.9 1045.1 4498.4 1260.4 1508.6 1508.6 1531.3 959.7 1531.3 1558.6 1559.4 1259.4 1259.4
212181_s_at 211395_x_at 211395_x_at 218323_at 206833_s_at 206833_s_at 208942_s_at 208942_s_at 205694_at 212149_at 44563_at 222339_x_at 203455_s_at 203455_s_at 201588_at 201588_at 201588_at 201788_at 201788_at 201788_at 201788_at 201788_at 201788_at 201788_at 20178_at 20345_s_at 217740_at 3847_at 20345_s_at 217740_at 3847_at 20345_s_at 217740_at 3847_at 20345_s_at 201860_s_at 201860_s_at 2017860_s_at 2017860_s_at 2017860_s_at 2017860_s_at 2017860_s_at 201785_at 201785_at 207804_s_at

	gb:NM_000398.3 /DEF=Homo sapiens diaphorase (NADH) (cytochrome b-5 reductase) (DIA1), nuclear gen gb:NM_016451.1 /DEF=Homo sapiens coatomer protein complex, subunit beta (COPB), mRNA. /FEA=mRN gb:NM_003202.1 /DEF=Homo sapiens transcription factor 7 (T-cell specific, HMG-box) (TCF7), mRNA. /FE U14573 Human Alu-Sq subfamily consensus sequence. gb:NM_002879.1 /DEF=Homo sapiens RAD52 (S. cerevisiae) homolog (RAD52), mRNA. /FEA=mRNA /GEN=Consensus includes ch: ARO22404 4 /DEF=Homo	Cluster Incl. Al431902:ti26e07.x1 Homo sapiens cDNA FLJ12432 fis, clone NT2RM1000018, highi Cluster Incl. Al431902:ti26e07.x1 Homo sapiens cDNA, 3 end /clone=IMAGE-2131620 /clone_end=3 /gb=A gb:NM_002490.1 /DEF=Homo sapiens NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 6 (14kD, B gb:L17328.1 /DEF=Human pre-TNK cell associated protein (3Cl) mRNA, complete cds. /FEA=mRNA /GEN=Consensus includes gb:BC004262.1 /DEF=Homo sapiene. Similar to cacitic close in the consensus includes gb:BC004262.1 /DEF=Homo sapiene.	gb:BC001282.1 /DEF=Homo sapiens GABA-A receptor-associated protein mRNA, complete cds. /FEA=mR gb:BC001282.1 /DEF=Homo sapiens, high-mobility group (nonhistone chromosomal) protein 17-like 3, clogb:NM_003477.1 /DEF=Homo sapiens Pyruvate dehydrogenase complex, lipoyl-containing component X; gb:BC001920.1 /DEF=Homo sapiens, actin, gamma 1, clone MGC:3728, mRNA, complete cds. /FEA=mRNA	gb:U97075.1 /DEF=Homo sapiens FLICE-like inhibitory protein short form mRNA, complete cds. /FEA=mR gb:U97075.1 /DEF=Homo sapiens FLICE-like inhibitory protein short form mRNA, complete cds. /FEA=mR gb:BC004399.1 /DEF=Homo sapiens, clone MGC:10985, mRNA, complete cds. /FEA=mRNA /PROD=Unkno gb:NM_005174.1 /DEF=Homo sapiens ATP synthase, H+ transporting, mitochondrial F1 complex, gamma gb:NM_00447.1 /DEF=Homo sapiens epidermal growth factor receptor pathway substrate 8 (EPS8), mRN gb:NM_000361.1 /DEF=Homo sapiens thrombomodulin (THBD), mRNA. /FEA=mRNA /GEN=THBD /PROD= db:NM_005536.2 /DEF=Homo sapiens incertains.	gb:BC000903.1 /DEF=Homo sapiens, high-mobility group (nonhistone chromosomal) protein 2, clone MGC Consensus includes gb:BF218804 /FEA=EST /DB_XREF=gi:11112494 /DB_XREF=est:601882315F1 /CLON gb:NM_006830.1 /DEF=Homo sapiens ubiquinol-cytochrome c reductase (6.4kD) subunit (UQCR), mRNA.gb:NM_012088.1 /DEF=Homo sapiens oculomedin (OCLM), mRNA. /FEA=mRNA /GEN=OCLM /PROD=ocul gb:NM_012088.1 /DEF=Homo sapiens 6-phosphogluconolactonase (PGLS), mRNA. /FEA=mRNA /GEN=PG gb:NM_014781.1 /DEF=Homo sapiens KIAA0203 gene product (KIAA0203), mRNA. /FEA=mRNA /GEN=KIA gb:NM_017752.1 /DEF=Homo sapiens hypothetical protein FLJ20298 (FLJ20298), mRNA. /FEA=mRNA /GE Consensus includes gb:AJ223321 /DEF=Homo sapiens RP58 gene, complete CDS /FEA=mRNA /DB_XREF
1 1 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1.21 1.21 1.21	2 4 4 4 5	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	121 122 122 122 122 122 122 122 122 122
567.7 1070.3 1075.1 2120.6 679.9 1018.5	4002.2 887.1 6745.5 773.3 806	1048.3 1146.6 1404.6 908.1	2244.7 1135.1 1170.7 1844.7	881.3 1128.2 1127.7 1216 1432	1471.5 1488.3 1529.2 1546.8 968.5 1073.3 11116.3
704.8 1322.2 1330.1 2634.1 833.3 1251.9	4906.6 1084.3 at 8222.3 939.1 975.3	1273.4 1383.4 1701.2 1087.8	2696.4 944.3 978.7 1542.4 1558.5	728.4 930.7 933.2 1008.3 1184.7	1218.8 1232.1 1265.9 1279.6 795.9 879.2 914.2
221392_at 202371_at 209028_s_at 201163_s_at 217094_s_at 221975_s_at	201358_s_at 4906.6 205255_x_at 1084.3 AFFX-hum_alu_at 8222.3 205647_at 939.1 212932_at 975.3	44617_at 202001_s_at 210704_at 214892_x_at	209787_s_at 209787_s_at 203067_at 221607_x_at 200749_at	210563_x_at 210652_s_at 205711_x_at 202609_at 203887_s_at 203011_at	208808_s_at 212297_at 202090_s_at 208274_at 218388_at 202034_x_at 219771_at 212774_at

211929 at	1445.7	1763.9	1 22	Concensus includes ab. A A527502 (EEA-EST IND. VDEE-ai.2260574 IND. VDFF
214022 s at	17713	2152 7	1 22	Consolution and Additional Inches of the Addit
213588 x at	2240	2734.2	1.22	Consensus includes ab: AAR38274 /FEA=EST /DB_XRET=91.2/09038 /DB_XRET=68t;ny11du2.51 /CLONE= Consensus includes ab: AAR38274 /FEA=EST /DB_XDEE=al: 2912072 /DB_XDEE==41.2012074 /DB_XDEE==41.2012074
203480_s_at	1138.4	1396	1.23	db:NM 014928.1 /DEF=Homo saplens KIAA1046 profelin (KIAA1046) mBNA /FEA=mBNA /GEN=KIAA1046
209921_at	1381.1	1693.9	1.23	gb:AB040875.1 /DEF=Homo sapiens hxCT mRNA for cystinedlutamate exchanger complete ode. /EEA=m
209067_s_at	1481.5	1826.3	1.23	gb:D89092.1 /DEF=Homo sapiens hnRNP JKTBP mRNA. complete cds. /FFA=mRNA /GEN=hnRNP IKTBP
208768_x_at	1771	2185.9	1.23	gb:D17652.1 /DEF=Human mRNA for HBp15L22, complete cds. /FEA=mRNA /PROD=HBp15l 22 /DB XRFF
208881_x_at	876.9	1088.7	1.24	gb:BC005247.1 /DEF=Homo saplens, isopentenyl-diphosphate delta isomerase, clone MGC:12281 mRNA
204440_at	1161.4	1436.5	1.24	gb:NM_004233.1 /DEF=Homo sapiens CD83 antigen (activated B lymphocytes, immunoglobulin sunerfam
201217_x_at	1202.9	1491.9	1.24	gb:NM_000967.1 /DEF=Homo sapiens ribosomal protein L3 (RPL3), mRNA. /FEA=mRNA /GEN=RPL3 /PRO
205849_s_at	1456.4	1812.5	1.24	gb:NM_006294.1 /DEF=Homo sapiens ubiquinol-cytochrome c reductase binding protein (UQCRB). mRNA
216526_x_at	1847	2282	1.24	Consensus includes gb:AK024836.1 /DEF=Homo sapiens cDNA: FLJ21183 fis. clone CAS11634, highly sin
217848_s_at	2233.8	2766	1.24	gb:NM_021129.1 /DEF=Homo sapiens pyrophosphatase (inorganic) (PP). nuclear gene encoding mitochon
217127_at	6.997	961.3	1.25	Consensus includes gb:AL354872 /DEF=Human DNA sequence from clone RP11-42015 on chromosome
201843_s_at	862.9	1082.6	1.25	gb:NM_004105.2 /DEF=Homo sapiens EGF-containing fibulin-like extracellular matrix protein 1 (FFFMP1)
213583_x_at	1342.8	1674.6	1.25	Consensus includes gb:BE964125 /FEA=EST /DB XREF=gi:11767593 /DB XREF=est:601657809R1 /CI ON
209277_at	1483.8	1861.3	1.25	Consensus includes gb:AL574096 /FEA=EST /DB XREF=qi:12933969 /DB XREF=est:AL574096 /CI ONF=C
203935_at	753.7	949.3	1.26	gb:NM_001105.2 /DEF=Homo sapiens activin A receptor, type I (ACVR1). mRNA. /FEA=mRNA /GEN=ACVR
35201_at	9.062	995.7	1.26	Cluster Incl. X16135: Human mRNA for novel heterogeneous nuclear RNP protein. L. protein /cds=/28.1704
219805_at	971.7	1225.3	1.26	gb:NM_022101.1 /DEF=Homo saplens hypothetical protein FLJ22965 (FLJ22965), mRNA /FFA=mRNA /GF
203753_at	988.9	1247.5	1.26	gb:NM_003199.1 /DEF=Homo sapiens transcription factor 4 (TCF4), mRNA, /FEA=mRNA /GEN=TCF4 /PRO
212183_at	1149.4	1448.6	1.26	Consensus includes gb: AW511135 /FEA=EST /DB XREF=qi:7149213 /DB XREF=est:hd43a08 x1 /Cl ONF=
201772_at	717.2	909.2	1.27	gb:NM_015878.1 /DEF=Homo sapiens antizyme inhibitor (LOC51582), mRNA, /FEA=mRNA /GEN=LOC5158
218864_at	767.1	976.2	1.27	gb:AF116610.1 /DEF=Homo sapiens PR00929 mRNA, complete cds. /FEA=mRNA /PROD=PR00929 /DB x
213300_at	7.767	1010.6	1.27	Consensus includes gb:AW168132 /FEA=EST /DB_XREF=gi:6399657 /DB_XREF=est:xq60c11.x1 /CLONE:=
218350_s_at	850.7	1082.9	1.27	gb:NM_015895.1 /DEF=Homo sapiens geminin (LOC51053), mRNA. /FEA=mRNA /GEN=LOC51053 /PROD=
210689_at	928.6	1177.7	1.27	gb:AF314090.1 /DEF=Homo sapiens claudin 14 (CLDN14) mRNA, complete cds. /FEA=mRNA /GEN=CLDN1
201215_at	6.786	1255.9	1.27	gb:NM_005032.2 /DEF=Homo sapiens plastin 3 (T isoform) (PLS3), mRNA. /FEA=mRNA /GEN=PLS3 /PROD
213961_s_at	995.1	1265.1	1.27	Consensus includes gb:AI077556 /FEA=EST /DB XREF=qi:3411964 /DB XREF=est:oz33f08.x1 /CL ONF=IM
213009_s_at	722	924.8	1.28	Consensus includes gb: AK022701.1 /DEF=Homo sapiens cDNA FLJ12639 fis. clone NT2RM4001938. highli
218171_at	757.5	8.996	1.28	gb:AF195514.1 /DEF=Homo sapiens VPS4-2 ATPase (VPS42) mRNA, complete cds. /FEA=mRNA /GEN=VP
202194_at	881	1129.6	1.28	Consensus includes gb:AL117354 /DEF=Human DNA sequence from clone RP5-976013 on chromosome
213712_at	963.2	1232.1	1.28	Consensus includes gb:BF508639 /FEA=EST /DB_XREF=gi:11591937 /DB_XREF=est:UI-H-BI4-aop-a-07-0-
204685_s_at	969.3	1240.6	1.28	Consensus includes gb:R52647 /FEA=EST /DB XREF=gi:814549 /DB XREF=est:vg82f05.s1 /CLONE=IMAG
208020_s_at	1161.5	1483.2	1.28	gb:NM_000719.1 /DEF=Homo sapiens calcium channel, voltage-dependent, L type, alpha 1C subunit (CAC

9b:NM_004450.1 IDEF=Homo saplens enhancer of rudimentary (Drosophila) homolog (ERH), mRNA, IFEA Consensus includes gb:BE741633 FEA=EST IDB_XREF=gi:10156975 / DB_XREF=est:601594740F1 (CLON 9b:NM_02426020.1 IDDEF=Homo saplens MAB21L2 protein (MAB21L2) mRNA, complete cds. FEA=mRNA (GEN Consensus includes gb:AV68675) FEA=EST IDB_XREF=gi:1072478 / DB_XREF=est:AV682679 CLONE=G 9b:NM_01499.1 IDEF=Homo saplens that those in control of the control of th
128 129 129 129 129 129 129 129 129 132 132 132 133 133 133 133 133 134 135 137 137 137 137 137 137 137 137 137 137
1625.4 2494 897.4 990.5 1078.1 1254.1 1254.1 1288 1333.5 1433.5 2251.4 2544.2 874.4 958.3 1017.9 1120.9 1340.6 1474.8 2598.8 5746.1 1087.4 1126.7 1289.6 1078.8 1739.3 1050.4 1183.4 1274.8 1331.2 846.9 878.3
1271.2 1944.2 694 770.6 836.2 971.6 995.2 1033.5 1110.6 1743.8 1969.5 673.9 735.5 1029.9 1134.7 2003.5 4410.8 829.2 857 984.1 816.3 1304.4 1205.3 1304.4 1315.1 789.8 890.1 959
200043_at 211983_x_at 210303_at 210303_at 2004135_at 204135_at 208939_at 2022112_at 201761_at 201953_s_at 201553_s_at 202657_s_at 202657_s_at 202657_s_at 202657_s_at 202657_s_at 202657_s_at 202693_at 203613_s_at 203613_s_at 203613_s_at 203613_s_at 203613_s_at 203613_s_at 203613_s_at 201653_s_at 203613_s_at 201653_s_at 202691_s_at 201733_s_at 202693_s_at 202693_s_at 202693_s_at 202693_s_at

gb:NM_002393.1 (DEF=Homo saplens vitamin A responsive; cytoskeleton related (JWA), mRNA, iFEA=mR gb:NM_006407.2 (DEF=Homo saplens vitamin A responsive; cytoskeleton related (JWA), mRNA, iFEA=mR Gb:BC004004.0 (DEF=Homo saplens clone MGC:4655, mRNA, complete cds. iFEA=mRNA iPROD-LUknow gb:BC004004.0 (DEF=Homo saplens calcium-ATPase (IMC) mRNA, complete cds. iFEA=mRNA (GEN=HK1 DG gb:NM_000432.1 (DEF=Homo saplens aclium-ATPase (IMC) mRNA, complete cds. iFEA=mRNA (GEN=HK1 DG gb:NM_000432.1 (DEF=Homo saplens ampled bet (A4) precursor protein (protease nextin-II, Alzhelmer di gb:NM_000432.1 (DEF=Homo saplens ampled bet (A4) precursor protein (protease nextin-II, Alzhelmer di gb:NM_000432.1 (DEF=Homo saplens mannosidase, alpha, class 2A, member 2 (MANAA2), mRNA, ireA=mRNA (GEN=MNA 000432.1 (DEF=Homo saplens mannosidase, alpha, class 2A, member 2 (MANAA2), mRNA, ireA=mRNA (GEN=MNA 000432.1 (DEF=Homo saplens strathcopeptide repeat domain 3 (TTC3), mRNA, ireA=mRNA (GEN=MNA 003316.1 (DEF=Homo saplens strathcopeptide repeat domain 3 (TTC3), mRNA, ireA=mRNA (GEN=MNA 003203.1 (DEF=Homo saplens strathcopeptide repeat domain 3 (TTC3), mRNA, ireA=mRNA (GEN=MNA 003203.1 (DEF=Homo saplens strathcopeptide repeat domain 3 (TTC3), mRNA, ireA=mRNA (GEN=GD:NM_000482.1 (DEF=Homo saplens strathcopeptide repeat domain 3 (TTC3), mRNA, ireA=mRNA (GEN=GD:NM_000486.1 (DEF=Homo saplens EADH) (Asp-Glu-Ala-Asp-His) box polypeptide 24 (DDX24), mRNA, ireA=mRNA (GEN=GD:NM_001482.1 (DEF=Homo saplens EADH) (Asp-Glu-Ala-Asp-His) box polypeptide 24 (DDX24), mRNA, ireA=mRNA (GEN=GD:NM_010482.1 (DEF=Homo saplens EADH) (Asp-Glu-Ala-Asp-His) box polypeptide 24 (DDX24), mRNA, ireA=mRNA (GEN=GD:NM_010482.1 (DEF=Homo saplens EADH) (Asp-Glu-Ala-Asp-His) box polypeptide 24 (DDX24), mRNA, ireA=mRNA (GEN=GD:NM_010482.1 (DEF=Homo saplens EADH) (Asp-Glu-Ala-Asp-His) box polypeptide 24 (DDX24), mRNA, ireA=mRNA (GEN=GD:NM_010482.1 (DEF=Homo saplens EADH) (Asp-Glu-Ala-Asp-His) (AdS-GR-MIN 010482.1 (DEF=Homo saplens EADH) (Asp-Glu-Ala-Asp-His) (AdS-GR-MIN 010482.1 (DEF
1.34 1.35 1.35 1.35 1.36 1.36 1.36 1.37 1.37 1.38 1.38 1.38 1.38 1.38 1.38 1.38 1.39 1.39 1.39 1.39 1.39 1.39
1009.9 1421.5 780 1203.1 1203.1 1308 1884.5 2328 1038.7 1139.7 1711.4 2094.3 2332.8 918.9 1294.2 1378.2 1378.2 1378.2 1380.1 6143.6 905.7 1031.5 1520.7 1129.6 1129.6 1150.7 1150.7 1174.6 1186.8 11539.7 1133.9
752 1063.1 575.7 887.9 948.5 966 1390.8 1726.1 762.8 825.7 835.1 1710.3 670.3 947.1 1006.1 1007.9 4489.1 655.3 749 915 1100.2 1105.8 1317.6 661.1 835 845.7 1361.2 1406.7 2259 111100.7
205655_at 200761_s_at 210933_s_at 217052_x_at 217052_x_at 209186_at 2009186_at 200027_at 200027_at 202032_s_at 2000958_s_at 2000958_s_at 2000958_s_at 2000958_s_at 2000958_s_at 2000958_s_at 2000958_s_at 2000958_s_at 2000958_s_at 214327_x_at 214327_x_at 214327_x_at 214327_x_at 214357_s_at 21445_at 209022_at 21485_at 21485_s_at 21485_s_at 214857_s_at 214872_at 204686_at 206133_at 206133_at 206133_at 206133_at 212852_s_at 209122_at 212869_x_at 212588_at

gb:NM_012294.1 / IDEF=Homo sapiens guanine nucleotide exchange factor for Rap1; Mr8s-regulated GEF Consensus includes gb:AW471220 / FEA=EST / IDB_XREF=ej:7041326 / IDB_XREF=est:xv13g08.x / ICLONE=gb:NM_012433.1 / IDEF=Homo sapiens splicing factor 3b, subunit 1, 155kD (57:381), mRNA. / FEA=mRNA / IGEN=BA Consensus includes gb:AW573214 / IEA=EST / IDB_XREF=gi:7248913 / IDB_XREF=est;U+HF-BL0-act-c-12.0 gb:NM_006373.1 / IDEF=Homo sapiens brain acid-soluble protein 1 (BASP1), mRNA. / FEA=mRNA / IGEN=BA Consensus includes gb:AW573314 / IEA=EST / IDB_XREF=gi:73893524 / IDB_XREF=est;U+HF-BL0-act-c-12.0 gb:NM_006373.1 / IDEF=Homo sapiens restlin (Reed-Sicinberg cell-expressed intermediate filament-associal consensus includes gb:AN802986 / IFEA=EST / IDB_XREF=gi:5395524 / IDB_XREF=est;W67a09.x / ICLONE=IM gb:NM_002956.1 / IDEF=Homo sapiens MRNA; cDNA DKFZP16/1G18121 (from clone DKFZP76/1G18121); com gb:NM_004030.1 / IDEF=Homo sapiens MRNA; cDNB_XREF=gi:578932 / IDB_XREF=est:W67a09.x / ICLONE=IM gb:NM_004030.1 / IDEF=Homo sapiens heterogeneous nuclear ribonucleoprotein C (C1C2) (HNRPC), mRNA Consensus includes gb:ZN8330 / IEA=EST / IDB_XREF=est:H3578330 / ICLONE=2.49 gb:NM_004034.1 / IDEF=Homo sapiens annexin A7 (ANXA7), transcript variant 2, mRNA. / IEA=mRNA / GEN gb:NM_001024.1 / IDEF=Homo sapiens annexin A7 (ANXA7), transcript variant 2, mRNA. / IEA=mRNA / GEN gb:NM_001024.1 / IDEF=Homo sapiens annexin A7 (ANXA7), transcript variant 2, mRNA. / IEA=mRNA / GEN gb:NM_001024.1 / IDEF=Homo sapiens annexin A7 (ANXA7), transcript variant 2, mRNA. / IEA=mRNA / GEN gb:NM_001024.1 / IDEF=Homo sapiens ribosomal protein 521 (RPS21), mRNA. / IEA=mRNA / GEN gb:NM_002899.2 / IDEF=Homo sapiens strondowania adjacent to 2 inc finger domain, 2 is GAZ2B), mRNA. Gonsensus includes gb:A132258.1 / IDEF=Homo sapiens krain-ind-binding protein 1, callular (RBP1), mRNA. / IEA=mRNA / gb:R000188.1 / IDEF=Homo sapiens RNA, complete cds. / IEA=mRNA / GEN gb:R000188.1 / IDEF=Homo sapiens APY mRNA, complete cds. / IEA=mRNA / GEN gb:R0001831.1 / IDEF=H	gb:NM_002102.1 /DEF=Homo sapiens glycophorin E (GYPE), mRNA. /FEA=mRNA /GEN=GYPE /PROD=gly gb:NM_000783.1 /DEF=Homo sapiens cytochrome P450, subfamily XXVIA, polypeptide 1 (CYP26A1), mRN Consensus includes gb:BG152979 /FEA=EST /DB_XREF=gl:12665009 /DB_XREF=est:nah24c06.y1 /CLONE Cluster Incl. AB023208:Homo sapiens mRNA for KIAA0991 protein, complete cds /cds=(732,2000) /gb=AB0 Consensus includes gb:Al300520 /FEA=EST /DB_XREF=gl:3959866 /DB_XREF=est:qn55e06.x1 /CLONE=IM Consensus includes gb:AW451954 /FEA=EST /DB_XREF=gi:6992730 /DB_XREF=est:UI-H-BI3-alt-h-06-0-U
4.1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	1.46 1.46 1.46 1.46 1.46
1212.5 1323.2 1508.7 1729.4 1764.6 1124.8 1126 1134.2 969.5 1004.6 1638.6 760.4 1504.3 1658.7 1658.7 1658.7 1658.7 1670.4 1230.5 1670.4 1230.5 1670.4 1230.5 1670.4 1870.2 1940.3 2397.6 3279 970.2	1221.6 1564.3 1995.8 2189.4 2261.5 912.6
864.4 947.8 1080.1 1231 1257.6 798.1 801.1 801.1 803.9 680.8 705.8 1154.5 1443.2 1443.2 1443.2 1443.2 1443.2 1443.2 1595.1 1158.4 1261.5 1344.3 1002.2 1324.5	834.6 1073.3 1363.1 1497.5 1546.3 619
204681 s at 217741 s at 201071 x at 202391 at 221773 at 219077 s at 219077 s at 201975 at 201975 at 200014 s at 200014 s at 200077 s at 200077 s at 2000834 s at 203380 s at 203380 s at 203107 at 208691 at 213017 at 200627 at 200027 at 2	207854_at 206424_at 221775_x_at 41220_at 204595_s_at 205434_s_at

Consensus Includes gb:T87225 /FEA=EST /DB_XREF=gi:715577 /DB_XREF=est:yc81f06.s1 /CLONE=IMAG gb:NM_000291.1 /DEF=Homo sapiens phosphoglycerate kinase 1 (PGK1), mRNA. /FEA=mRNA /GEN=PGK Cluster Incl. AB020648:Homo sapiens mRNA for KIAA0841 protein, partial cds /cds=(0,1925) /gb=AB02064 gb:NM_005354.2 /DEF=Homo sapiens jun D proto-oncogene (JUND), mRNA. /FEA=mRNA /GEN=JUND /PR gb:NM_015920.1 /DEF=Homo sapiens 40S ribosomal protein S27 isoform (LOC51065), mRNA. /FEA=mRNA Consensus includes gb:AA083483 /FEA=EST /DB_XREF=gi:1625544 /DB_XREF=est:zn32a06.s1 /CLONE=1 gb:NM_000410.1 /DEF=Homo sapiens hemochromatosis (HFE), mRNA. /FEA=mRNA /GEN=HFE /PROD=he gb:NM_001924.2 /DEF=Homo sapiens growth arrest and DNA_damaga indivisible class consensus includes gb:NM_001924.2 /DEF=Homo sapiens growth arrest and DNA_damaga indivisible class class consensus includes gb:NM_001924.2 /DEF=Homo sapiens growth arrest and DNA_damaga indivisible class cl	gb:NM_002418.1 /DEF=Homo sapiens wotilin (MLN), mRNA. /FEA=mRNA /GEN=MLN /PROD=motilin /DB_gb:NM_002418.1 /DEF=Homo sapiens motilin (MLN), mRNA. /FEA=mRNA /GEN=MLN /PROD=motilin /DB_gb:NM_015507.2 /DEF=Human growth hormone-dependent insulin-like growth factor-binding protein mRNA, c gb:NM_015507.2 /DEF=Homo sapiens EGF-like-domain, multiple 6 (EGFL6), mRNA. /FEA=mRNA /GEN=EG Consensus includes gb:BE796924 /FEA=EST /DB_XREF=gi:10218031 /DB_XREF=est:601587284F1 /CLON gb:AF000994.1 /DEF=Homo sapiens ublquitous TPR motif, Y isoform (UTY) mRNA, alternative transcript 3 gb:NM_014495.1 /DEF=Homo sapiens anglopoietin-like 3 (ANGPTL3), mRNA. /FEA=mRNA /GEN=ANGPTL Consensus includes gb:Al985751 /FEA=EST /DB_XREF=gi:5813028 /DB_XREF=est:wr76h07.x1 /CLONE=IM gb:NM_0009991 / DEF=Homo sapiens ribosomal protein L38 (RPL38), mRNA. /FEA=mRNA /GEN=RPL38 /P	Consensus includes gb:AU149908 /FEA=EST /DB_XREF=gi:1101429/ /DB_XREF=est:INNA / JEA=HTAN / JEA=HTA
1.47 1.47 1.47 1.47 1.47 1.48	1.48 1.48 1.49 1.49 1.49	1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5
1205 1315.1 1435.6 1752.8 1821.1 3657.2 1273.6	1472.9 1793.5 1836.1 827.5 882.3 1109.9 2043.5 4029.9	1080.4 1364.7 1412.2 1687.5 2219.6 936 1267.7 1341.4 1018.2 135.7 1365.7 1305 1305 1305 1305 1305 1305
821.4 897 976.5 1192.4 1237.8 2495.1 860.4	995.2 1213.3 1241.7 555 592.5 745.2 1371.3 2695.6 722.4	722.4 907.1 941.3 1121.9 1476.4 617.9 837.1 890 668.4 877.6 951.6 1002.7 1289.6 1939.2 670.4 855.2 879.7
213960_at 200738_s_at 3688_at 203752_s_at 218007_s_at 214211_at 206087_x_at	207473_at 210095_s_at 219454_at 201606_s_at 211149_at 2119803_at 213864_s_at 202029_x_at	211207 s at 202690 s at 202690 s at 201012 at 201612 at 2014672 at 207458 at 20470 at 214179 s at 200912 s at 200912 s at 2010592 s at 201059 at 210779 x at 222108 at 2221748 s at

Gonsensus includes gb:Al421192 /FEA=EST /DB XREF=gi:4287123 /DB XREF=est:tf2de12.4 / ICLONE=IM gp:NM_006897.1 /DEF=Homo sapiens transforming, acidic coiled-coil containing protein 2 (TACC2), mRNA g gb:NM_006897.1 /DEF=Homo sapiens transforming, acidic coiled-coil containing protein 2 (TACC2), mRNA g gb:NM_006897.1 /DEF=Homo sapiens includes gb:AL110164.1 /DEF=Homo sapiens includes gb:AL110164.1 /DEF=Homo sapiens includes gb:AL110164.1 /DEF=Homo sapiens includes gb:AL110164.1 /DEF=Homo sapiens ribosomal protein 137a (RPL374), mRNA /FEA=mRNA /GEN=RPL37 / Gonsensus includes gb:AW1871575 /FEA=EST /DB_XREF=gi:7317760 /DB_XREF=est:tha01877515 /CLONE=gb:NM_000998.1 /DEF=Homo sapiens ribosomal protein 137a (RPL374), mRNA /FEA=mRNA /GEN=RPL37 / gb:NM_002998.1 /DEF=Homo sapiens ribosomal protein 137a (RPL374), mRNA /FEA=mRNA /GEN=RPN gb:NM_016673.1 /DEF=Homo sapiens ribosomal protein 137a (RPL374), mRNA /FEA=mRNA /GEN=RPN gb:NM_016673.1 /DEF=Homo sapiens ribosomal protein 137a (RPL374), mRNA /FEA=mRNA /GEN=RPN gb:NM_016673.1 /DEF=Homo sapiens raveolin 2 (CAV2), mRNA /FEA=mRNA /GEN=RPN
7.54 7.57 7.57 7.59 7.59 7.59 7.59 7.59 7.59 7.59 7.59 7.59 7.59 7.59 7.59 7.59 7.59 7.60 7.61 7.62 7.63
933 1265.2 1823.4 2022.2 1287 1568 13018 1436.2 2597.9 2663.8 2766.1 1622.2 1828.4 1919.1 942 1622.2 1828.4 1919.1 1639.3 1482.8 1523.4 7156.5 1127.6 1438.1 2116.7 3951.9 1748.9 1748.9 1748.9 1748.9 1756.6 3951.9
605.8 820.2 1184.2 1312.1 829.2 1012.7 8390.7 713 923.2 1668.1 1021.4 1152.1 1027.4 1151.5 1207.9 590 1057.1 2196.1 551.4 770.3 922.6 947.8 887.8 1306.8 2433.8 1103.4 1103.4 1237.2 761.1 857.6
203738_at 202289_s_at 221368_at 221368_at 212687_at 207720_at 207720_at 201429_s_at 201429_s_at 201352_at 201352_at 201352_at 201502_at 201663_at 21230_at 201648_s_at 21230_at 200397_at 2003937_at 200397_at 2003937_at 2003937_at 2003937_at 2003937_at 2003937_at 2003937_at 2003937_at 2003937_at 2003937_at 2009337_at 2009337_at 2009337_at 2009337_at 2009337_at 2009337_at 2009337_at 2009337_at 2009347_at 2

gb:NM_00579.1 /DEF=Homo saplens abl-interactor 12 (SH3-containing protein) (AIP-1), mRNA, IFEA=mR Consensus includes gb:BF033313 FEA=EST /DB_XREF=gi:10741025 /DB_XREF=est:001438002F1 /CLON Consensus includes gb:AI814252 FEA=EST /DB_XREF=gi:402467 /DB_XREF=est:wy/1094 x1 /CLONE—IM gp:NM_02528.1 /DEF=Homo saplens translation factor sulf homolog (GC20), mRNA, IFEA=mRNA /GEN=GN=GN=GN=GN=GN=GN=GN=GN=GN=GN=GN=GN=GN	Consensus includes gb:BG500301 /FEA=EST /DB_XREF=gi:13461818 /DB_XREF=est:602546969F1 /CLON Consensus includes gb:Al925635 /FEA=EST /DB_XREF=gi:5661686 /DB_XREF=est:wo34f07.x1 /CLONE=IM
7.69 1.69 1.71 1.72 1.73 1.73 1.74 1.75 1.77 1.77 1.77 1.81 1.83 1.84 1.86 1.86 1.86 1.86 1.86 1.86 1.86 1.86	1.9
1335.2 1747.8 1164.2 1492.6 3115.5 1703.7 4902.4 1056 1484.5 1922.4 1780.2 1420.1 1872.8 1654.1 1872.8 1654.1 1890.6 2482.4 1762.8 2482.4 1762.8 2482.4 1762.8 2483.3 1475.9 2425.1 9066.3 1553.8	1637.2
800 1040.3 687.8 883.1 1818.7 989.6 2844.6 609.4 859.7 1151.7 1022.8 813.6 1071.4 93.7 1060.9 1388.4 937 1060.9 1388.4 937 1060.9 1388.4 930.1 1071.4 937 1089.2 1162.8 1388.4 930.1 1284.6 796.9 1284.6 796.9 1284.6 796.2 1309 521.8 812.3 812.3	862.9
207268 x at 212426 s at 213020 at 221301 at 201738 at 201738 at 200863 x at 200863 x at 200863 x at 200817 x at 200867 at 2008671 at 2008671 at 200765 x at 2008939 x at 200726 at 200939 x at 201722 x at 213356 x at 204744 s at 204744 s at 213320	212391_x_at

gb:NM_013341.1 /DEF=Homo saplens hypothetical protein (PTD004), mRNA. /FEA=mRNA /GEN=PTD004 /P 1.91 Consensus includes gb:AA725102 /FEA=EST /DB_XREF=gi:2742809 /DB_XREF=est:ai08h05.s1 /CLONE=:1 1.91 gb:NM_000165.2 /DEF=Homo saplens, cytochrome c, clone MGC:12367, mRNA, complete cds. /FEA=mRNA 1.92 gb:NM_001025.1 /DEF=Homo saplens ribosomal protein S23 (RPS23), mRNA. /FEA=mRNA /GEN=RPS23 /P 1.93 qb:NM_006290.1 /DEF=Homo saplens fumor necroeis factor, alpha-induced protein 3 /TNEA in 2010.00 /	, , , ,		gb:NM_003330.1 /DEF=Homo sapiens thioredoxin reductase 1 (TXNRD1), mRNA. /FEA=mRNA /GEN=TXNR 2 gb:L05095.1 /DEF=Homo sapiens ribosomal protein L30 mRNA, complete cds. /FEA=mRNA /PROD=riboso 2 qb:NM_000971.1 /DEF=Homo sapiens ribosomal protein L7 (RPI 7), mRNA /FEA=mRNA /GEN=EDI 7 /DDD			2.05 gb:NM_005594.1 /DEF=Homo sapiens nascent-polypeptide-associated complex alpha polypeptide (NACA 2.06 Consensus includes gb:BF026595 /FEA=EST /DB_XREF=gi:10734307 /DB_XREF=est:601672736F1 /CLON 2.06 Consensus includes gb:BF125458 /FEA=EST /DB_XBEF=gi:10064409 /DB_XBEF=gi:100644	, , ,	2.07 gb:NM_012286.1 /DEF=Homo sapiens MORF-related gene X (KIAA0026), mRNA. /FEA=mRNA /GEN=KIAA0 2.1 gb:NM_014233.1 /DEF=Homo sapiens upstream binding transcription factor, RNA polymerase I (UBTF), m 2.1 cb:M25700.1 /DFF=Human mitochondrial ubiquinous binding profess months.		a 0	2.17 gb:AB022435.1 /DEF=Homo sapiens LIG mRNA for E2 ubiquitin-conjugating enzyme, complete cds. /FEA 2.2 gb:NM_005746.1 /DEF=Homo sapiens pre-B-cell colony-enhancing factor (PBEF), mRNA. /FEA=mRNA /GE	2.27 gb:NM_000661.1 /DEF=Homo sapiens ribosomal protein L9 (RPL9), mRNA. /FEA=mRNA /GEN=RPL9 /PRO 2.28 gb:NM_003720.1 /DEF=Homo sapiens Down syndrome critical region gene 2 (DSCR2), mRNA. /FEA=mRNA	
	222	222	NNN	2. 2.	2 2 2	2 2 2	2 2 2	2 4 6	1 4 4	2.2.	2. 2.	222	
2030.4 2110 3142.6 3248.8 5750.3	2077.9 6398.2 2305.7	2055.2 1283.7 2041	2599 2983.5 3349	1536.2 1011.5	3674.5	3635.4 1581.2 11421.8	1655.1	2887 1126.6 2328.6	4908.5 1198.8	1015.3 1278.9	1100.8 2042.9	4380.1 1323.4	
1063.7 1103.9 1642.1 1692.1 2997.9	1074.3 3320.9 1186.6	1051.5 647.7 1026	1298.5 1489.1 1676.7	765.7 496.3	1804.2	17759 769 5532.5	799.2	1398 536.8 1107.6	2342.5 568.3	477.7 595.6	507.3 929.6	1928.9 581.2	
219293_s_at 202130_at 201667_at 208905_at 200926_at 200926_at	212788_x_at 211959_at 200063_s_at	200061_s_at 217824_at 201842_s_at	201266_at 200062_s_at 200717_x_at	203414_at 208896_at	208635_x_at 212185_x_at	212578_x_at 212578_x_at 213084_x_at	55065_at 220960_x_at	201994_at 202692_s_at 209066_x_at	200095_x_at 201064_s_at	201031_s_at 213478_at	202347_s_at 217739_s_at	200032_s_at 203405_at	

Consensus includes gb:AL031778 /DEF=Human DNA sequence from clone 34821 on chromosome 6p12.1 gb:NM_017627.1 /DEF=Homo sapiens hypothetical protein FLJ20030 (FLJ20030), mRNA_/FEA=mRNA_/GE Consensus includes gb:AW003022 /FEA=EST /DB_XREF=gi:S848860 /DB_XREF=est:wq61403.x1 /CLONE=C consensus includes gp:AH515273 /FEA=EST /DB_XREF=gi:S848860 /DB_XREF=est:aL515273 /CLONE=C gb:NM_005033.1 /DEF=Homo sapiens pp14 homolog (LOC51186) mRNA_/FEA=mRNA /GEN=LOC51186 /Pg gb:NM_001038.1 /DEF=Homo sapiens pp21 homolog (LOC51186), mRNA_/FEA=mRNA /GEN=LOC51186 /Pg gb:NM_001038.1 /DEF=Homo sapiens pp21 homolog (LOC51186), mRNA_/FEA=mRNA /GEN=LOC51186 /Pg gb:NM_001038.1 /DEF=Homo sapiens splicing factor, arginineserina-rich (transformer 2 Drosophila homolog:NM_004593.1 /DEF=Homo sapiens splicing factor, arginineserina-rich (transformer 2 Drosophila homolog:NM_004033.1 /DEF=Homo sapiens splicing factor, arginineserina-rich (transformer 2 Drosophila homolog:NM_004033.1 /DEF=Homo sapiens presentiin-associated protein mRNA, complete cds. /FEA=mRNA /GEN=RPS3A, gb:NM_001006.1 /DEF=Homo sapiens prosomal protein S3A (RPS3A), mRNA_/FEA=mRNA /GEN=RPS3A, gb:NM_001007.1 /DEF=Homo sapiens ribosomal protein S4. X-linked (RPS4X), mRNA_/FEA=mRNA /GEN=RPS0A, mRNA_/FEA=mRNA /FEA=RPS0A, mRNA_/FEA=mRNA /FEA=RPS0A, mRNA_/FEA=mRNA /FEA=RPS0A, mRNA_/FEA=RPS0A, mRNA_/FEA=RPS0	
2.28 2.29 2.29 2.33 2.33 2.33 2.34 2.35 2.35 2.35 2.35 2.36 2.36 2.69 2.74 2.85 2.97 3.07 3.21 3.22 4.86	
1721.3 9942.1 1273.9 1484.2 1540 1867.3 2042 13420 13418.7 1516.9 3121 1916.6 4643.6 1487.2 4005.2 1779.6 4862.3 3817.8 4954 2724.9 1774.2 4524.6 2311.5 4628 11218.4	
754.9 4353.8 555.9 648.1 659.8 800 875.1 5728.7 1221.2 743.2 1786.9 553.2 1668.9 1293 1612.2 855.9 553.3 1404.5 704	
204108_at 207783_x_at 204651_at 213477_x_at 205061_s_at 217975_at 205282_at 203282_at 208825_x_at 208834_x_at 208834_x_at 208834_x_at 201357_x_at 201257_x_at 201250_x_at 2012724_at 20	